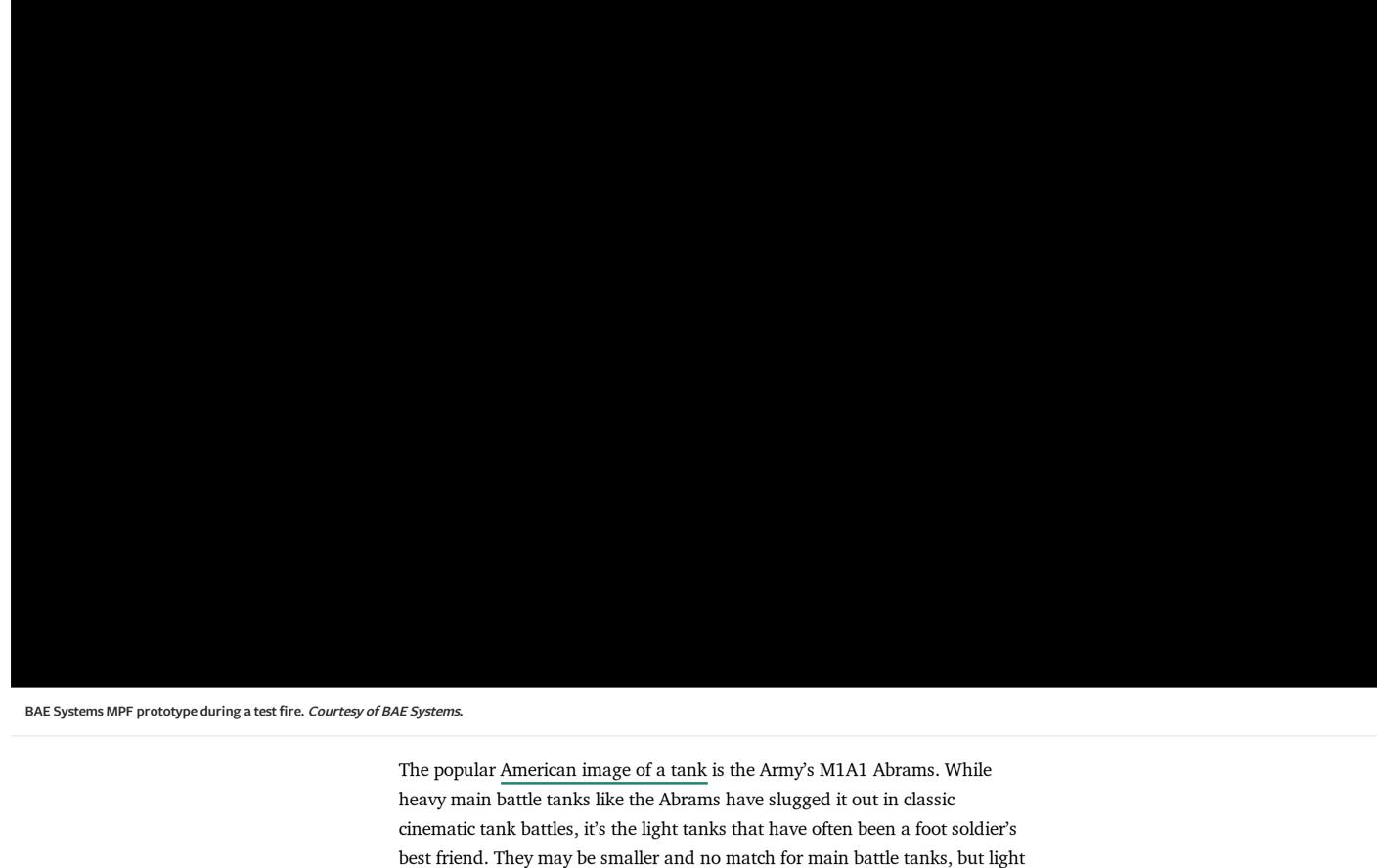
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Two Light Tank Prototypes Battle for the Future of Army Firepower Soldiers are testing two tank prototypes at Fort Bragg, but only one is destined to become the Army's new light tank. // BY ERIC TEGLER MAR 7, 2021



and the Cold War.

Now, U.S. Army soldiers with the 82nd Airborne Division are testing the limits of a new generation of light tanks at Fort Bragg, North Carolina. The outcome of those tests—and the opinions of the soldiers themselves—will likely crown the winner of the Army's Mobile Protected Firepower (MPF) acquisition program. With MPF, the Army is looking to give its airborne and light infantry units something they haven't had since the 1990s: a light tank to augment their firepower and help them penetrate lightly armored, medium-gunned defenses in natural or urban terrain. In the 1980s and early 1990s, the M551 Sheridan

tanks like the M3 Stuart and the M551 Sheridan protected U.S. troops from

light armored vehicles, mortars, and heavy machine guns throughout WWII

filled that role, but it was retired and its replacement, the M8 Buford, was canceled later in the decade. It has taken the Army more than 20 years OTHER HEAD-TO-HEAD BATTLES. to get back to providing light tank capability to its Infantry Brigade Combat The Head-to-Head Battle To Replace

Teams (IBCTs). These tanks will be more the Black Hawk lethal, easier to maintain, and able to keep SU-57 Vs. J-20: A Closer Look at up with an IBCT's new Infantry Squad America's New Jet Vehicle transports. They'll need to be air transportable via C-17 cargo aircraft, ready to fight upon landing, and capable of learning new combat tricks as they age. After cutting through a number of proposals, only two prototypes remain, one from General Dynamics Land Systems (GD) and another from BAE Systems



BAE Systems

determine a winner.

far behind.

(BAE). The service eventually wants 504 of these new tanks; an initial 26 will begin production in 2022 after a head-to-head soldier evaluation helps As of early 2021, each company was supposed to have already delivered a dozen of its light tank prototypes to the Army, including four examples of each to Fort Bragg. General Dynamics made the deadline, and BAE's prototype isn't When the full complement of MPF prototypes arrives at Fort Bragg, soldiers

will learn their capabilities and determine whether an IBCT can consistently keep the light tanks ready to rumble. They'll also have a fundamental choice to make—whether to recommend a light tank or an even lighter tank. **BIG & BIGGER** Anything that meets the definition of a tank isn't small. But there's a big size difference between GD's tanks and BAE's tanks, each following a design lineage that stems from its maker's previous vehicles. General Dynamics builds

the Army's main battle tank, the 68-ton M1 Abrams, which is designed to

Vehicle, designed to transport infantry or scouts with armor protection.

defeat enemy tanks and heavy armor. BAE builds the 28-ton Bradley Fighting

Both have drawn bits of mechanical DNA from these two vehicles to bring their MPF prototypes to life.

General Dynamics BAE's tank stems from a design conceived for the Army's "The basic vehicle design from the chassis to the turret, Armored Gun System (AGS), an air transportable light tank to electronic architecture and power generation all offer growth," replace the M551 Sheridan. Developed by one of BAE's corporate GD Land Systems Director, Tim Reese, told Popular Mechanics. ancestors, the result was the M8 Buford (pictured), and the first Growth potential stems from the fact that the company's MPF is prototypes arrived at Fort Knox in 1995. large, somewhere in the 30 to 40 ton range. A pair of its light

they can be flown to airfields to support expeditionary forces. According to Miller, a C-17 will hold three fully armored BAE light tanks, and with its armor removed, one could even fit in a C-130 Hercules, the workhorse of the Army. "You can get your hands on a C-130 in a combat theater," Miller says, referring to the larger number of Hercs compared to C-17s.

BAE's MPF carries a three-man crew (a commander, gunner, and

driver) like its M8 predecessor, and a small crew requires less

support in the field. Added benefits of the tank's size include a

smaller profile as well as a smaller radar cross-section, making it

But the Pentagon canceled the AGS program in 1997, a victim of

unfavorable assessments and the defense draw-down of the late

"We decided to stay in the same size, weight, space envelope that

we had for the AGS program," Jim Miller, BAE's director of

business development, told *Popular Mechanics*. "We think that

BAE describes its MPF as somewhere between the Joint Light

Tactical Vehicle (JLTV) and Stryker infantry carrier in terms of

Size has implications for everything from thermal and electronic

Army specifies that two MPFs need to fit inside a C-17 airlifter so

signatures to armor protection, crew, and transportability. The

size. It weighs in the low- to mid-20-ton range.

90s. Though the M8 never made it into active service, it forms

the conceptual basis for BAE's MPE

fits what the Army really wants."

harder to target, BAE says.

Image: Wikimedia Commons

SPEED & POWER The speed of a light infantry brigade is generally governed by the pace at which its soldiers march and overcome opposition. But with the arrival of the air-droppable ISV, forward elements of IBCTs can now move at over 60 mph cross-country.

tank also yields better livability and division of work for its four

Image: General Dynamics

General Dynamics

whatever it might be doing."

person crew (a commander, gunner, loader, driver), according to MPF program director Scott Stilson. "If you have to spend long periods in the vehicle, warfighters should see less fatigue." The extra real estate offers five paths of egress for the tank commander and crew, including hatches in the side of the hull. "Those are lessons learned from Iraq and Afghanistan during rollover situations," Reese says.

General Dynamics maintains that size helps with placing future

sensors and weapons, possibly including lasers. The ability to

separate ammunition storage from the turret is another benefit.

tanks will fit on a C-17 as the Army requires, Reese says.

General Dynamics' prototype has been described as combining a

chassis based on its AJAX family (pictured) of light armored

vehicles with its M1 Abrams turret design and elements of its

Griffin tank demonstrator. Reese says this new tank "uses their

lessons in a purpose-built vehicle" while adding what he calls a

The size of GD's MPF enables it to better accommodate

battery (likely lithium) and power management system.

technological growth including new sensors and protection

systems, the company says. It also eases incorporation of a new

With more available space in its turret and driver's station, the

few advanced technologies "that are unique."

Any light tank supporting these fast-moving troops from the

his firm's MPF (pictured) "can keep up with the formation

The company wouldn't say what powerplant its tank uses or

what speed it can attain, but reporting suggests it has an 800

horsepower turbo diesel capable of top speeds around 45 mph

General Dynamics also wouldn't get into details about what

GD's MPF has "a lot more capability than past vehicles,"

suggesting the range might dip below these numbers.

range the tank might have, but past light tanks like the Sheridan

and M8 have published ranges of 250-350 miles. Reese says that

The tank will ride on traditional steel tracks using a lighter road

suspension forgoes the traditional torsion-bar set up in favor of

external hydraulic suspension units, which bolt to the side of the

The MPF will "be a real joy to motor cross-country. Soldiers will

love it. It has great top speed, good tactical range," Reese says.

wheel design with improved durability and lower noise and

vibration, according to General Dynamics. Its advanced

hull, offering a better ride and protection.

(depending on terrain and the level of armor).

82nd Airborne will need to keep pace. But Reese is confident that

BAE's MPF rides on a traditional torsion bar suspension but uses

and weight, and produces a better ride.

vibration of a steel track."

Image: Soucy Defense

The M8 Buford could do about 47 mph depending on

could be a version of Detroit's 15.6 liter DD16.

conditions, and BAE says its MPF can reach 45 mph. Reports say

BAE will use a 550 horsepower turbo diesel, and Miller says that

MTU (Detroit Diesel) is BAE's supplier, suggesting the engine

BAE has also considered hybrid-electric powertrains though

there are no current plans to integrate one. The company won't

reveal the MPF's range, but with similar weight/size to the M8

a composite rubber track (CRT) developed by Soucy Defense

better fuel economy, braking, and acceleration, reduces noise

"We didn't really understand the benefit of the Soucy track,"

Miller acknowledges. "When we started driving the vehicles we

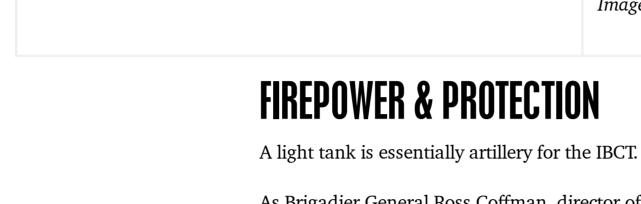
noticed a big difference. You don't have the constant bounce and

(pictured) rather than a conventional steel track. The CRT yields

Buford, the newer tank may match its predecessor's legs, around

BAE Systems

280 miles.



buildings in dense urban terrain...The MPF will be used to disrupt, break in and breach those secure defensive zones." The Army required several common elements in both competitors, including the main gun. GD and BAE will use a 105 mm NATO-standard M35 low recoil cannon. Sources put its maximum range at about 8,975 yards (8,200 meters). Both will use a Raytheon-made second-generation FLIR sight/sensor system, and both will have scalable armor, capable of being installed or removed in the

field.

BAE's armor can be installed by its crew with onboard tools in

tailoring protection to expected threats. The tank also sports a

new hull design to counter IEDs that weren't envisioned when

"The front of the vehicle is sloped in such a way and is low

enough that it's pretty hard to hit," Miller says. "If you do get a

shot at it, the shape and size limit the chances of damage to the

The crew will use a 21-round auto-loader, enabling fire at rates

up to 12 rounds per minute. Miller says the loader also allows

the crew to chamber and then return rounds to the exact

location where they were in the magazine.

such a system can be easily removed, BAE says.

about three hours. It's a bolt-on, bolt-off affair that allows

General Dynamics

don't think our competitors do."

Reese says.

Image BAE Systems

BAE Systems

BAE designed the M8.

vehicle."

BAE Systems

BAE says its chief goal with its MPF was to keep things

says.

to go get one."

Image: BAE Systems

"logistically simple" from its size to its composite rubber track.

"You're not constantly tinkering with it to keep it moving," Miller

The engine is located at the rear of the tank and can be cranked

out on a cradle using a hand crank or power drill. The engine

can even run while on the cradle, and its modular design

tank, which speeds up the repair process.

supports component replacement. Swapping one engine for

another doesn't require removing armor from the rear of the

The tank can also be recovered by the standard HEMTT trucks

already incorporated within an IBCT. "This is a vehicle going to

an infantry brigade," Miller says. "They don't have heavy vehicle

recovery assets. You won't need an M88 [heavy recovery vehicle]

THE SOLDIERS DECIDE

As Brigadier General Ross Coffman, director of the Army's Next Generation Combat Vehicle Cross-Functional Team, told Army Times in 2018: "There's no

Image: General Dynamics

precision munition to remove bunkers from the battlefield, to shoot into

"We leverage the V3 fire control system of the Abrams tank,"

In fact, GD has said that its MPF turret has the same displays,

architecture, and power distribution as the M1 Abrams SEPV3

turret (pictured). IBCT's don't have Abrams crews, but some of

those personnel will help stand-up the new MPF complements

Reese adds that the turret has a purpose-designed commander's

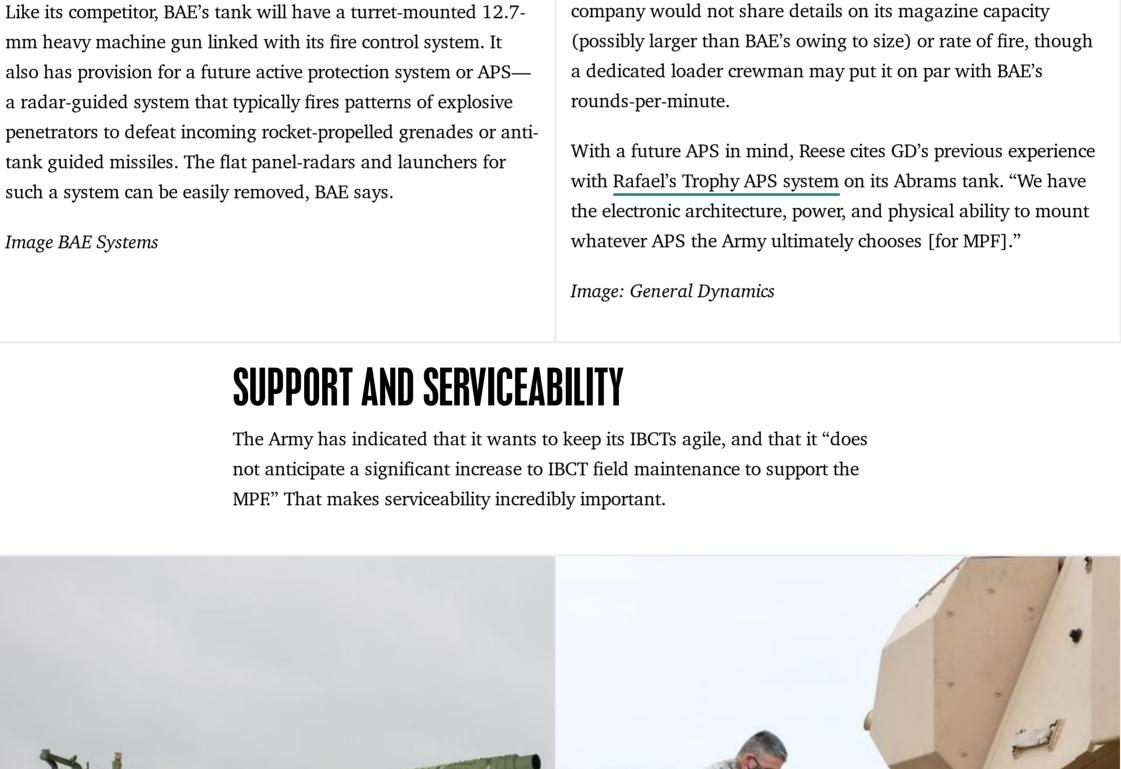
Abrams but with new features. "It's a capability we offer that we

One reason for the larger crew complement may be that GD's

MPF uses a manual loader rather than an autoloader. The

and be part of the soldier assessment of these new tanks.

independent thermal viewer, similar to one in use with the



access. Stilson says that "our power pack removal and installation is very quick," comparing its quick-disconnect electrical and hydraulic interfaces to similar layouts in the Abrams and Stryker vehicles.

General Dynamics

General Dynamics' MPF (pictured) has been designed with an

capability. "Actual repairs to the modules are much easier than

components of the propulsion system—the engine, transmission,

emphasis on line-replaceable modules with self-diagnosis

on most versions of the Abrams tank," Reese says.

The engine resides in the front of the tank and major

and accessories—are located in selected positions for easy

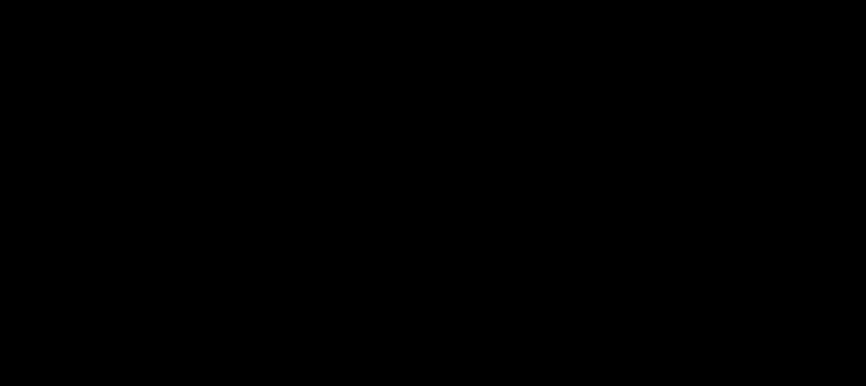
If soldiers have worked on an Abrams in their Army tenure,

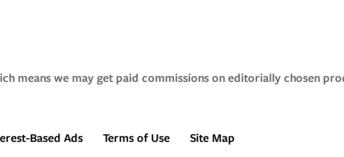
they'll feel at home maintaining the MPF, Reese says. "We

wanted to make it very familiar for some of the other

[maintenance specialists] already in the fleet."

Image: U.S. Army / Sgt. James Harvey





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some other things to get that footprint." It's worth noting that MPF isn't the most friendly of competitions, with both players aware of what's at stake. The winner could also win over the Marine Corps, which has already decided that its M1s are too heavy for future amphibious warfare; a light tank replacement could be the perfect solution. Whoever wins, the future of infantry firepower will be fought—and found on the fields of Fort Bragg. POP MECH PRO The Science of Surviving an **Avalanche New Warp Drive Model Uses** This Smart Humidifier Has A Huge **Conventional Physics**

The Army's Ground Combat Systems office acknowledges that personnel at Fort Bragg are "excited about being able to be the first soldiers to operate a cutting-edge new combat platform." The tanks that GD delivered immediately stirred curiosity, Reese says. "The soldiers were climbing all over them. They were excited. They wanted to hop inside and see how they worked." Miller expects a similar reaction from the troops when BAE's prototypes show up at Fort Bragg. "We'll get sense for whether [a simplified logistic model] is valued by the crews and commanders, and whether they're willing to trade off

Why the DC-3 Is Such a Badass Plane